REMARKS

Claims 1-3, 5, 6, and 37-41 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 5,070,036 to Stevens in view of United States Patent No. 4,910,169 to Hoshino. Applicants have cancelled Claims 1, 2, 6, and 37-39 thereby rendering this rejection moot with respect to these claims. However, with respect to Claims 3, 5, 6, 40 and 41, Applicants respectfully traverse this rejection.

Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of the present invention as defined in independent Claims 3 and 5. More specifically, the cited references, alone or in combination, fail to disclose or suggest an embedded electro-conductive layer that includes, *inter alia*, an "electroconductive layer being formed of a Cu layer, an Al layer, or an Al alloy layer having Al as a main component thereof, and said electroconductive layer being formed on and in contact with said metal growth promoting layer; wherein said metal growth promoting layer is a TiN layer containing oxygen at a lower concentration than said barrier layer," as defined in independent Claim 3. Additionally, the cited references, alone or in combination also fail to disclose or suggest an embedded electroconductive layer that includes, *inter alia*, an "electroconductive layer being formed of a Cu layer, an Al layer, or an Al alloy layer having Al as a main component thereof, and said electroconductive layer being formed on said ground layer and in contact with said upper part of said ground layer," as defined in independent Claim 5.

The present invention defined in independent Claim 3 has a feature such that the electroconductive layer formed on a Cu layer, an A1 layer, and an A1layer, or an A1 alloy

layer is formed on and in contact with the metal growth promoting layer which is a TiN layer contacting oxygen at a lower concentration than said barrier layer. With this, growth of a Cu layer, an Al layer, or an Al alloy layer is promoted.

On the other hand, Stevens discloses a multi-layered structure of a MON layer (metal oxy-nitride layer); a low concentration oxygen Tin layer 7; a Ti layer 8 (containing Al, Si, O, N) and an Al alloy layer 9. The Ti layer 8 (containing Al, Si, O, N) is located between a low concentration oxygen Tin layer 7 (corresponding to the metal promoting layer of the present invention) and Al alloy layer 9. The Ti layer 8 containing Al, Si, O, N has a function of improving adhesion of the Al alloy layer 9 containing Si, Ti with the low concentration oxygen Tin layer 7, and a function of preventing reaction of the Al alloy layer 9 containing Si, Ti and the low concentration oxygen TiN layer 7.

As described above, in Stevens, Ti layer 8 (containing Al, Si, O, N) is necessary and Al alloy layer 9 containing Si, Ti contacts the Ti layer 8 (containing Al, Si, O, N).

Further, Hoshino, as shown Fig. 1, discloses a multi-layered structure formed of a metallic layer 14; a barrier layer 16; and a Cu metallization layer 18, which is formed on a silicon substrate 10 via a contact hole of an insulating film 12. The metallic layer 14 is composed of Ti, Al, Pt or the like, and creates an ohmic contact between the metallic layer 14 and the silicon substrate 10. The barrier layer 16 is composed of TiN, W, WN, Ta, TaN or the like, and serves as a barrier which prevents a reaction between the silicon substrate 10

and the Cu metallization layer 18. The barrier layer 16 has the same function as that of Ti layer 8 (containing A1, Si, O, N) of Stevens et al.

In Hoshino, the Cu metallization layer 18 is formed in direct contact with the barrier layer 16. Hoshino does not disclose a metal growth promoting layer having lower oxygen concentration in metal.

Moreover, with regard to a combination of Stevens and Hoshino, there is no description in the respective cited references about constituent such that an electroconductive layer formed of a Cu layer or the like is formed on and in contact with the metal growth promoting layer which is a TiN layer containing oxygen at a lower concentration than a barrier layer. As such, the present invention of Claim 3 is not disclosed or suggested in a combination of Stevens and Hoshino. Accordingly, withdrawal of the §103 rejection of independent claim 3 and associated dependent claims 40 and 41 is respectfully requested.

The present invention defined in independent Claim 5 has a feature such that the electroconductive layer formed of a Cu layer, an A1 layer, or an A1 alloy layer is formed on the ground layer and in contact with the upper part (corresponding to a metal growth promoting layer) of the ground layer. Therefore growth of a Cu layer, an A1 layer, or an A1 alloy layer is promoted.

On the other hand, in Stevens et al., Ti layer 8 (containing A1, Si, O, N) is positioned between a low concentration oxygen TiN layer 7 (corresponding to a metal growth promoting layer) and an A1alloy layer 9. Since Ti layer 8 (containing A1, Si, O, N) has a function of improving adhesion of the A1 alloy layer 9 (containing Si, Ti) with the low

concentration oxygen TiN layer 7 and a function of preventing reaction of the A1 alloy layer 9 (containing Si, Ti) and low concentration oxygen TiN layer 7, then the Ti layer 8 (containing A1, Si, O, N) is necessary, and the A1 alloy layer 9 (containing Si, Ti) contacts the Ti layer 8 (containing A1, Si, O, N).

As described above, it is clear that there is a difference between Claim 5 and Hoshino as well. Moreover, similar to the case of Claim 1, the present invention according to Claim 5 is not described or suggested by a combination of Stevens and Hoshino. Accordingly, Applicants respectfully request to withdrawal of this §103 rejection of independent Claim 5 and associated dependent Claim 6.

Claim 42 stands rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 5,070,036 to Stevens in view of United States Patent No. 4,910,169 to Hoshino and further in view of United States Patent No. 5,552,341 to Lee. Applicants respectfully traverse this rejection.

Claim 42 depends from independent Claim 3, and therefore includes all of the features of Claim 3, plus additional features. Accordingly, Applicants respectfully request that the §103 rejection of dependent Claim 42 under the combination of Stevens et al., Hoshino and Lee be withdrawn considering the above remarks directed to Claim 3.

Claims 43, 48 and 49 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 5,070,036 to Stevens in view of United States Patent No. 4,910,169 to Hoshino and further in view of United States Patent No. 5,612,254 to Mu et al. Applicants have cancelled Claim 48, without prejudice, thereby rendering this

rejection moot with respect to this claim However, with respect to Claims 43 and 49, Applicants respectfully traverse this rejection.

Claims 43 and 49 both depend from independent Claim 3, and therefore includes all of the features of Claim 3, plus additional features. Accordingly, Applicants respectfully request that the §103 rejection of dependent Claims 43 and 49 under the combination of Stevens et al., Hoshino and Mu et al. be withdrawn considering the above remarks directed to Claim 3.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference would aid in the prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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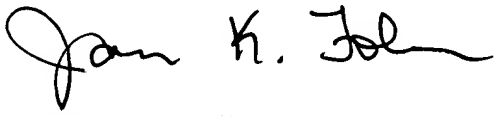
By 

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